A philosophy of transport: Michel Serres' recursive epistemology in the *Hermes* pentalogy

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The nebulous aggregation of concepts, propositions, and proper names that constitutes 'theory' as it is typically understood within the humanities departments of English-speaking universities is tremendously affected by the chains of transmission via which philosophical texts come to be deemed properly 'theoretical'.[1] These processes of importation and propagation are never straightforward, involving displacement, distortion, diffusion, and interference. The channel between 'theory' and its sources is never noiseless. This is particularly noticeable in those strands of theory that heavily rely upon resources drawn from continental European traditions (e.g. phenomenology, psychoanalysis, critical theory, structuralism, philosophy of technics – more recently, in media theory specifically, also media archaeology, cultural techniques, etc.), insofar as the stubborn monolingualism of much Anglophone scholarship ensures that the theoretical corpus is in large part determined by often aleatory patterns of translation and publication.

When considering the reception of Michel Serres' oeuvre in relation to this state of affairs, and in the context of English-language academia specifically, two things stand out to me: first, that the still-untranslated status of his *Hermes* pentalogy (1968; 1972; 1974; 1977; 1980) has led to this thoroughgoing philosophical account of communication and mediation being largely neglected; and second, that the lack of traction gained by French epistemology has meant that the crucial connections between Serres 'philosophy and that of Gaston Bachelard are rarely addressed in detail.[2] I will therefore, in the remainder of this article, attempt to point toward a couple of themes and motifs contained within these five books that I would regard as potentially valuable for media theory – and in particular, that might help contribute to a media theory better able to reckon with its own status as a mediated (and mediating) object.

The networked encyclopaedia

Taking seriously Bachelard's call for constant methodological innovation – on the basis that 'even the most fecund of methods may eventually become sterile without the fertilizing stimulus of new problems to solve' (1984: 10) – Serres seeks to modify the former's approach, without wholly rejecting it, in order to account for the dramatic shifts in contemporary science that had taken place in the intervening decades. Science, for Bachelard, 'is like a half-renovated city, wherein the new (the non-Euclidean, say) stands side by side with the old (the Euclidean)' (1984: 7). The problem in Serres' view, however, is that *both* of these edifices seem increasingly antiquated. Epistemology must keep up with this city's ongoing renovations: innovations in set theory, topology, information theory, genetics, and so forth.[3]

Serres aims to articulate a 'new new scientific spirit '(himself acknowledging the awkwardness of this expression), which works, on one hand, to buttress many of Bachelard's methodological insights whilst refurbishing them in line with emergent scientific theories, and on the other hand, to uncover the Leibnizian encyclopaedism and combinatorics which covertly underpins these theories.[4] After all, he argues,

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[1] The question of what exactly comprises 'theory' is fraught and contentious. For expediency's sake, I will cite Simon During's (2010: 95-96) description of 'a discrete formation inside the humanities after about 1970' which 'produces a body of very loosely connected concepts with varying genealogies and implications (if still connected to the European philosophic tradition) that constitute a residual, unrecognized-as-such "theory corpus" not always able to be tied to particular proper names'.

[2] Although Serres is lucky to have had a quite substantial portion of his oeuvre translated, this sadly does not extend to the five *Hermes* books, wherefrom only a small selection of essays are available in English, primarily as part of the *Hermes: Literature, Science, Philosophy* (1982a) collection, which also contains a conspicuously lucid introduction to the main themes of his work. Other excellent secondary texts include Maria Assad's *Reading with Michel Serres* (1999) and Christopher Watkin's recent *Michel Serres: Figures of Thought* (2020).

[3] In order to avoid unnecessary confusion, in this article I consistently use the term 'epistemology' in the French sense, i.e. the philosophy of science and scientific knowledge (comprising thinkers such as Poincaré, Bachelard, Koyré, Cavaillès, and Canguilhem, amongst many others), rather than in the English sense of a branch of philosophy dealing with knowledge in general (which is typically referred to, in French, as '*la théorie de la connaissance*').

[4] On Serres' neo-Leibnizian take on epistemology, see Mercier (2015; 2019b).

> the sciences have managed, via paths that he blindly planned out, to arrive at a state described by Leibniz: they form, or strive to form, a 'continuous body like an ocean', which can only be arbitrarily divided into the Aethiopian Ocean, the Caledonian Ocean, etc. This continuum is the locus of movements and exchanges: methods, models, and results circulate all across it, incessantly exported to or imported from all places, along routes that are often regulated and sometimes capricious: a network or mesh in the ocean (*HII*: 9-10).[5]

The partitions that once divided the encyclopaedia into discrete parts have collapsed, revealing in their stead a relativized network of overlapping regions and interwoven cross-references, none of which can be firmly established as fixed points or referents upon which all others would hinge. The epistemologist becomes a 'a wandering and almost omnipresent subject, granted the status of interceptor: an interceptor of communication, of messages circulating through theoretical, global, and intersubjective networks' (*HII*: 141).

Bachelard's 'philosophy of no', which strives to be adequate to scientific thought by ensuring its openness to new kinds of evidence and new explanations that challenge or contradict established ways of thinking, is reconstructed by Serres into 'a philosophy of transport: intersection, intervention, and interception' (*HII*: 10), founded upon a circulation and multiplication of knowledge freed from all stable references, and thus impossible to master from any single point of view.[6] The epistemologist finds themselves caught indeterminately between two distinct but complementary tasks: to know and to circulate, having to either situate themselves within a given region of knowledge, and thus remain ignorant of the transport of meaning across regions that is fundamental to science, or focus instead upon this process of transport, passing through each of these regions at the expense of being able to settle themselves within the stable (if provisional) confines of any one. Serres chooses the latter option, noting that in recognizing this indeterminism, one is forced to confront the fact that 'the lucid gaze upon the field of knowledge has come up against the same *de jure* limits as the investigative gaze of knowledge upon the world itself' (*HII*: 41).

Indeed, one of the central themes running throughout the five *Hermes* books is the need for a more methodologically pluralistic conception of the sciences, for which there can no longer be any queen-science nor epistemology able to survey the entire field from a fixed, objective position. In point of fact, 'each science is a science of the sciences, a *de facto* point of view and a *de jure* point of view looking onto the encyclopaedia' (*HII*: 31). Each region has its own, native language into which both the world and other forms of knowledge are translated, with all the distortion and noise that this inevitably entails. The encyclopaedism extolled by Serres is thus in no way comparable with the rigorously codified, sectionalized, and synoptic encyclopaedia, organized in accordance with an external schema, that one would typically associate with early modernity:

> if the contemporary encyclopaedia is structured like Leibniz's system (minus, of course, harmonic pre-establishment), then it naturally follows that each of its regions is a complexion, complexity is its dominant concept, notions of the dictionary and translation are ceaselessly mobilized, and methodological pluralism straightaway emerges as a distribution of points of view across the system; finally, a philosophy of communication must inevitably be established that expresses the encyclopaedia and that is – given that it expresses the world such as it is, such as the sciences read it and institute it – a philosophy of communication without substance, i.e. without fixity or reference (*HII*: 13).

An encyclopaedia in constant movement, wherein knowledge continually overflows its conventional framing; an encyclopaedia traversed by invariants and isomorphisms, linking together regions that once seemed distant.

All of which is to say, somewhat circuitously, that Serres' early philosophy, in its articulation of an epistemology premised upon communication, transport, and circulation, speaks quite directly (albeit in a perhaps unfamiliar disciplinary language) to the concerns of contemporary media theory. Of course, Serres' relevance has not been entirely misprized within this domain: for instance, some of his concepts have received sustained attention by German media theorists.[7] *The Parasite* (1982b), as elliptical as it

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[5] All translations of Serres are my own, unless otherwise noted. The five volumes that constitute the *Hermes* pentalogy are cited in this article as *HI*, *HII*, *HIII*, *HIV*, and *HV* respectively.

[6] Cf. Bachelard, *The Philosophy of No* (1968).

[7] In terms of material accessible in English, see for example: Siegert (2015) on cacography; Engell (2013) on tactility; and Sybille Krämer (2015 [2008]) on communication, translation, and exchange.

often is, remains a central text for grasping the complications and limitations of the concept of noise as deployed by information theory and cybernetics.[8] But it seems unfortunate, in my estimation anyway, that the sophisticated system developed in the *Hermes* pentalogy has not been explored further within the sphere of media theory – even if Serres would later come to reject many of its claims (above all, its aspiration to a unitary model of science).

One of the aspects that stands out in these five books is their apposite (and in many ways prescient) concern with developing an epistemological methodology appropriate to the overwhelming breadth, intrication, and interconnection of contemporary science, as well as human knowledge more generally.[9] Serres builds upon Bachelard's 'non-Cartesian' epistemology, which, like the sciences from which it draws its inspiration, 'tries to read the real complexity of things beneath the simple appearance' and 'seeks diversity beneath identity and tries to go beyond superficial and summary views' (1984: 139). But for the former, we need to go beyond this, accounting for an ever-growing and shifting field composed of manifold elements and links in constant interaction, a system wherein various sciences continually converge and diverge in novel fashions, to the extent that one will never be able to totalize this field from a single perspective: 'crossed coordination, intersection, and application become essential aspects of Bachelardian complexity; they make an irreversible or linear order unthinkable' (*HII*: 65).

In other words, the contemporary scientific encyclopaedia must be understood in topological terms, as a *network*:

> [f]or a given point, I can draw the connection node, the product, and the schema of intersection: astrophysics is a region where parts taken from optics, electricity, thermodynamics, chemistry, and astronomy (none of which are simple regions) are thrown together. It refers to all these sciences, in the same way that the study of Lie groups refers to all of mathematics today. But in the same way that, in turn, each different science is a referred region, my local schema is repeated everywhere, without me being able to draw the global schema. I can move about from region to region, the configuration is stable, but I cannot reach the geometric of all configurations. I can travel in the labyrinth from crossroad to crossroad, from exchanger to exchanger, but I cannot figure the totality of the route in a fixed plan. In the place of interreferences, I lack a global reference: it is essential that I be deprived of it (*HII*: 65).

The non-hierarchical encyclopaedia is composed of interreferences and interferences. Singular, autochthonous regions, cut off from their neighbours, are gradually connected up, becoming 'exchangers of concepts, methods, and models' (*HII*: 65). The independence and autonomy of scientific fields of study is gradually attenuated, as their existence comes to depend more and more upon their myriad links with each other. Leibniz's *ars inveniendi* is supplanted by an *ars interveniendi*, whereby scientific progress is achieved by circulation, translation, and correspondence between these increasingly mobile and permeable regions. '[I]ntersection is heuristic, and progress is interwoven' (*HII*: 13).

In the first chapter of the first volume of the *Hermes* pentalogy (*Communication*, 1968a), Serres begins by asking us to imagine a network diagram. He goes on to enumerate a number of affordances of such a diagram, as a means of methodological figuration, contrasted against the traditional dialectical form of argumentation. To very briefly summarize these affordances: a) whereas dialectical reasoning is unilinear, premised upon a univocal transmission of content through a single, simple channel, the network is 'characterized by a plurality and complexity of the channels of mediation' (*HI*: 12); b) instead of a univocal opposition between terms, one finds in the network a 'differentiation of types and quantities of determination', allowing for a pluri-determination of vertices (*HI*: 14); c) an equipotency cannot be posited between these various lines of determination, producing 'a complicated and constantly changing set representing an unstable situation of power carefully distributing its arms or arguments in an irregularly-meshed space' (*HI*: 15); d) the 'pluralist differentiation and irregularity of the spatial distribution of vertices and paths allows us to conceive of (and experience) local and momentary associations of particular points and links', cutting small, clearly defined, and well organized sub-totalities out of the network's overarching totality (*HI*: 16); e) the network diagram figures spatio-temporal shifts, transformations, and variations at various scales, capturing a fluidity and mobility that

[8] For an especially clear exposition of this aspect of Serres' work, and its relevance to questions of noise more broadly, see Thompson (2017: 56-62). On noise with respect to philosophical communication specifically, see also Sutherland (2021).

[9] Serres 'is extremely important,' suggests Stephen Kennedy, 'in terms of supporting models of thought capable of accounting for the current complex nature of our existence where the fuzziness of uncertainty and anxiety are recurring features' (2021: 112).

eludes other methods of representation; and lastly, f) the plurality of connections from which the network's vortices are formed allows for the apprehension of a retroaction or feedback completely incompatible with models of linear, irreversible causality – 'the source and receiver are, simultaneously, effect and cause' (*HI*: 20).

Serres' espousal of network topology thus sets the scene for his involved and evocative account of knowledge in an age of almost unfathomable complexity, one to which the simple oppositions and linear sequences of dialectical thinking cannot possibly remain adequate. But it also alludes to his work on Leibniz, in whose combinatorics he discerns a pivotal, if perhaps incipient account of the network form. In *The System of Leibniz* (1968b), his doctoral thesis, Serres uses this form as the basis for understanding Leibniz's peculiar systematicity, the rigour of which is founded upon an arborescent and tabular mathematics freed from the limitations of the Spinozist *more geometrico*. Even though the Leibnizian system, devoid of any central, guiding text, scattered across a host of books, articles, letters, and notes, a great deal of which were not published in his lifetime, may well contain 'hundreds and hundreds of different approaches for a concept or a being, an idea or a reality' (1968b: 13), this does not threaten such rigour.

By constructing network diagrams for both his philosophical notions and the mathematical model upon which he draws, Leibniz's systematicity is brought into relief:

> [e]ach of these networks' regions is figured by a kind of star node (a 'vertex'), each thread of which, efferent and/or afferent, crosses and joins all or part of all the other vertices. It becomes readily apparent that Leibniz has always taken great care to multiply these junctions and crossings, to link each point to all the others by many, if not all, possible paths: combination, composition, expression, and conspiracy. And his general idea of mathematics is analogous to his idea of the philosophical system: in both, all things consent, and the highest point of the sciences is, in his eyes, the theory of this consent (1968b: 14-15).

Leibniz's system involves 'a variation of pluralities under the regulation of formal laws' (1968b: 17), this formalism enabling both a conceptual multivalence whereby elements of the system can be integrated into various orders and filled with various kinds of semantic content, and a concomitant multilinearity whereby problems are dealt with in a number of different, contrapuntal ways, traversing several regions at once. And in an isomorphous manner, Serres founds his unitary conception of the sciences upon the model of the mathematics of his time (e.g. set theory, topology, etc.), which he hopes will, thanks to its formal purity (i.e. its total lack of determinate content), allow him to avoid the accusation of still elevating a particular discipline to the status of a domineering queen-science.[10] Whereas classical mathematics is generally symbolic (such that signs correspond to specific meanings), modern mathematics is formal, and in such a formal system 'one is not concerned at all with meaning, one never refers, either explicitly or implicitly, to significative content' (*HI*: 31), the result being a multivalence that renders its concepts transportable across diverse domains.

The formal and the empirical

The network diagram is exemplary of Serres' appeal to formalism, offering a structural representation of the formation and circulation of knowledge without claiming to impose any determinative content upon the regions that it surveys. Of course, said diagram does not, for us today, possess the same novelty that it probably did in the 1960s: by virtue of ubiquitous computing, the network is an everyday concept, a cliché even, deployed in countless contexts without much in the way of critical reflection; it has also been normalized as a methodological figure within the social sciences (and particularly in fields such as science and technology studies), thanks above all to the remarkably widespread uptake of actor-network theory. 'Those who follow networks, or study the sciences,' declares Bruno Latour, the doyen of the latter theory, 'are only documenting the *nth* loop in the spiral whose fabulous beginning Serres sketches for us' (1993: 84). It is instructive, though, that by the mid-1990s, Latour (1996) finds himself having to clarify that the 'network' of actor-network theory has nothing to do with the technical sense of this word (e.g. sewage networks, train networks, subway networks, or telephone networks). The very fact that he has to distinguish this diagrammatic figure from its empirical correlates suggests that its formal purity is no longer self-evident, if it ever was.

[10] On Serres' recourse to mathematics and information theory more generally, see Bühlmann (2020).

One of the guiding threads of Bachelard's epistemology is the dialectical relationship between the rational and the real, which manifests in a corresponding relationship between formal structures and their empirical application:

> [s]cientific observation is always polemical; it either confirms or invalidates a prior thesis, a preexisting model, a plan for observation. It shows as it demonstrates; it establishes a hierarchy of appearances; it transcends the immediate; it reconstructs first its own models and then reality. And naturally, once the step is taken from observation to experimentation, the polemical character of knowledge stands out even more sharply. Now phenomena must be selected, filtered, purified, and cast in the mould of the instruments used; produced in accordance with their plan. And instruments are nothing but theories materialized. The phenomena they produce bear the stamp of theory throughout (1984: 12-13, translation altered).

Empirical application casts a light upon the technical hindrances of any preconceived theoretical project, prompting new interpretations and formulations of this theory, which in turn acts as a spur to further experimentation. The consequence of which is 'that there is more to mathematics than formal structures, and that every pure idea is accompanied by an imagined application, an example that does duty for reality' (1984: 5), an observation that Serres builds upon in an especially productive manner.

Despite appearances, Serres argues, there are no purely theoretical or experimental sciences, at least when viewed from a historical lens. Which might seem a slightly surprising claim, given what has already been said about his appeals to the formal purity of modern mathematics. 'The history of mathematics,' he clarifies, 'adequately demonstrates that purity is only relative: a horizon' (*HII*: 50). At any given moment, the latest developments in mathematical thinking (as well as theoretical physics) will likely to seem to possess a refinement – a general applicability – surpassing that of any prior theory. This generality is not an absolute state though, but a single stage in an ongoing process of generalization of its objects and methods, one that makes all prior theories seem like special cases or specific instances. Thus, as he explains in a passage from the second *Hermes* volume (*Interference*, 1972) worth quoting at length, this continual purification actually allows one to recover the residua that are left behind:

> mathematical science is not pure, in itself and by divine right; rather, it moves toward purity. Then, turning around, the mathematician perceives previous theories as being applied theories. The antecedent, on the basis of history, is perceived, after the fact, as applied, on the basis of purity (in general, *de facto* history turns into *de jure* history). Hence, Euclidean space appears to us as the space of masons and architects. This is obviously not the space that the Greek mathematicians really had in mind, but that which has been retrospectively recovered by our contemporaries: the former contained a *de facto* purity that the latter removed from it in order to constitute the *de jure* rule. And the sediment left by the progress which sweeps away purity is this Euclidean, quasi-technological geometry. Epistemological truth requires this historical truth. The same is true of 'perspectival' space, which can only appear to us as that of painters and stonemasons. Movement is therefore essential in judging purity and judging application: the passage toward an increasingly refined and transparent purity brings the preceding stage back to its technical state. It is thus impossible to judge these spaces in the same way that the Greeks or geometers of past centuries would have: a judgement of purity is, as it develops, eventually (and necessarily) transformed into a judgement of application (*HII*: 50-51).

The epistemologist witnesses a complex, historical movement whereby mathematics' progression toward an ever-increasing formal purity repeatedly and reciprocally uncovers its singular and applied (i.e. empirical, technical, pragmatic, etc.) origin. The more formal it seems in its present state, the more its preceding states seem correlatively naïve, worldly, and even unmathematical.[11]

Latour's need to warn that his usage of the term network must not be conflated with its various empirical applications might suggest to us that this concept has well and truly lost its appearance of formal purity. In the same way that information theory – which, for Serres, possesses a multivalence that has allowed it to be imported into many different disciplines, in line with its universalist pretensions – is likely to seem to us today as singularly and rather blatantly wedded to the problems of telecommunications and electrical engineering from which it arose, no longer able to be posited as a general theory of communication, the image of the network, as ubiquitous as it is, is likely to evoke particular empirical instances (which these days might include financial networks, trade networks,

[11] On Serres' consideration of mathematics and history, see Mercier (2019a).

broadcast networks, computer networks at varying scales of distribution, social networking sites, or even the increasingly common parlance of 'networking' as a social activity) that immediately call its abstraction into question.

In fact, from a media theoretical perspective, one might now even view this abstraction or formalization as obscuring something fundamental about the ways in which this concept is deployed. One could point, for example, toward Tiziana Terranova's still-prescient observation that the model of network power operative in the internet involves 'as a dimension of its openness not only a benevolent welcoming of differences but also a more general drive towards expansion' (2004: 62), a neo-imperialist technocultural impulse. One could argue, following Wendy Chun, that '[a]lthough they enable individuals to cognitively map their relation to others, networks also confuse and obfuscate', grounded as they are upon the assumption that 'everything can be reduced to nodes and edges' (2016: 39-40). Over time, the network diagram's purported generality becomes a reminder of the messy materiality – the noise – from which it is abstracted. A model designed to represent complexity comes to seem unduly simplistic. Or one could note, as Tung Hui-Hu does, that 'the network is always more than its digital or physical infrastructure', for it chiefly comprises 'the idea that "everything is connected," and, as such, is a product of a system of belief' (2015: 10).

Use of the network concept and form is more prevalent now than ever – including within the everyday vernacular, far removed from its provenance in mathematics and engineering. But this ubiquity helps highlight its inadequacies as a mode of figuration. In any case, the universalism for which Serres advocates in regard to network topology, information theory, set theory, or any of his other privileged formalisms – a universalism based upon formal purity and generality – will probably strike the reader today as somewhat implausible, not only because of the preponderate distaste for such sweeping claims in contemporary scholarship, but because these models simply no longer give the impression of being as pure or as general as they once did.[12] But of course, Serres himself would no doubt recognize this. His universalism, such as it is posited, is only ever provisional, precisely for the reason that the formalism of any model will decay over time, as the forward march of mathematical purification continues unabated. A rigorous epistemology, immanent to the scientific method and its discoveries, requires this provisionality.

Making one's way sequentially through the five *Hermes* volumes (published over the course of twelve years), it becomes obvious that Serres himself was quickly becoming dissatisfied with the models upon which he had initially relied. In the third volume (*Translation*, 1974), he still views network topology as an ideal means of representation for a 'marvellous age of genealogical pluralism, where the generation of words and discourses, beings and things, issuing from anywhere, spreads without constraint' (*HIII*: 27). By the time of the final two (*Distribution*, 1977 and *The Northwest Passage*, 1980, respectively), however, he is far more sceptical regarding its epistemological adequacy. To return to the things themselves, he avers, means 'taking them as they are, no longer linking them together in linear sequences or multiple planes woven into a network, but dealing with them directly as large numbers, large populations, *clouds*' (*HIV*: 40, my emphasis). It means treating the interweaving of the network (let alone the rigid structures of the grid or tree diagram) as the exception, rather than a totalizing rule. It means understanding that '[a]ll our partitions and all our divisions, our differences, chains, series; sequences, consequences, systems, orders, and formations, hierarchies and *archés*' (*HIV*: 40) are the arbitrary products of deliberate choices, which are in turn fundamentally acts of *power*. And ultimately, it means mixing, melting, and dissolving these structures, 'returning to the things themselves all their rights prior to our intervening' (*HIV*: 40). He appeals to a dispersive *distribution* that precedes combinatorics, sets, orders, signals, and any other kind of structuration or definition. Not the distribution of specific messages, but the noise from which all such messages contingently arise.[13]

The aforementioned figure of the cloud becomes one of his preferred images for evoking a 'chaos, disorder, and background noise the complexity of which far exceeds the competence of established networks' (*HV*: 64), the indistinct borders of which stand in contrast to the smooth, distinct lines of the traditional encyclopaedia. Whereas the *Hermes* pentalogy begins by outlining a structural method

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[12] More recently, Alain Badiou has espoused his own ontological universalism grounded in set theory. Justin Clemens and Adam Nash (2015: 19) extol Badiou's 'exceptional, ingenious propositions and arguments 'concerning set theory; I, however, remain obstinately unfamiliar with the former's work, so I'll just have to take their word for it…

[13] N. Katherine Hayles proffers a helpful exploration of Serres' 'divided loyalties', whereby he is 'attracted by the promise of universal laws that hold true regardless of local circumstance' and at the same time 'delights in the refractory resistances of local sites that prevent their assimilation into global theories' (1988: 4-5).

premised upon formal models and heuristics, by the end it is the residua which inevitably elude such formalization that are not only treated as the central focus of its study, but are elevated to a status of ontological primacy. The real, we discover *pace* Hegel, is not rational; it is disorder. The rational is a blip, an anomaly, a 'precise, exact, clear-cut, rigorous, acute, distinct island' (*HIV*: 11) that momentarily appears within an indifferentiable ocean. Epistemology must turn its attention toward fluctuation, turbulence, noise, stochastic processes, fuzzy sets, and so on and so forth. 'Our networks are locally immersed in clouds, our structures in distributions, like archipelagos in the sea' (*HV*: 64).

This gesture toward a tumultuous, protean reality, unable to be squished into the moulds of representational thought, brings Serres into contact, somewhat surprisingly (by his own admission) with the metaphysical psychology of Henri Bergson, of whom the former is frequently derisive. And we are in media theory are all likely familiar with such gestures, thanks to the growing preponderance of Bergsonian and Deleuzian approaches within this sphere – even if their methods and protocols are often quite different to those which Serres elaborates. Hence it is not his move away from formalism per se that interests me here; rather, it is the way in which this move can be considered part and parcel of an epistemological system that stresses the need to 'open a new epistemological spectrum and discern those colours that our prejudices effaced' (*HIII*: 31) – which is to say, to be continually revised both in light of new discoveries and paradigms and in recognition of its own previously undiscerned flaws and limitations.

The question of complexity, and how we grapple with it, must henceforth be central to any rigorous account of media and mediation. The object of study – our contemporary media environment, in all of its multiscalar intricacy, unfathomable density, and unavoidable entanglement with our lifeworld – demands such an approach.[14] We need a media theory adequate to this complexity (or which, more realistically, at least aims toward such adequation), and this in turn means a media theory that interrogates its own theorization, reflecting upon the ways in which it is itself tied up with this complexity – for instance, the ways in which it traverses and intersects with other fields of study, producing an involuted and mutable meshwork of concepts and methods.[15] This discipline is no stranger to celebratory calls for theoretical eclecticism or ecumenicalism, but if we are going to be more than just intellectual bowerbirds, collecting bright and shiny concepts for display, we need to pay more attention to the reciprocally determined feedback loop between theory and its object. In short, we need to reflect upon the variegated ways in which media theory is *mediated* by the media of which it speaks and vice versa, with all the inevitable recursion and circularity that this implies.

Conclusion

'Media theory,' observe Scott Wark and McKenzie Wark, is today 'mediated by the platform, which presents us with readymade conceptualizations that we uncritically incorporate into our theories' (2019: 310). This is one of the hurdles such theory constantly encounters: we unceasingly utilize the media technologies that we purport to analyse, our quotidian experience is saturated by them, with the consequence that even the most sceptical critics are likely to be at least somewhat drawn into their logics and discourses, shaped by their affordances. It is impossible to extricate the act of theorization from its material (and technical), intellectual, and institutional conditions – and these include not only the media under examination, but also those used for research, writing, dissemination, promotion, and so on. This is the hurdle Plato confronted in the *Phaedrus*, two and a half millennia ago, and it still persists, in a greatly intensified form, today.[16] Instead of just tritely signalling adherence to the standard scholarly conventions of self-reflexivity, media studies may need to engage conscientiously with the classically philosophical problem of the condition and the conditioned in regard to its own practice, and the recursive relationships therein. Serres' work alone is not sufficient for this task, but it certainly offers significant resources to help us along the way.

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[14] Marjorie Perloff is perhaps even understating things when she remarks that 'there can be no doubt that the technological environment of the present time from radio and TV, to cellular phones, to the new Internet technologies, creates a level of noise undreamed of even a few decades ago '(2005: 103).

[15] 'For a media theory inspired by Serres,' writes Timothy Barker, 'it is the flow of information across a diversity of media channels that is the topic of philosophical inquiry and it is the codes that condition this flow that come in for critical scrutiny' (2015: 53). Such scrutiny, however, must also be cast upon the determinative effect this transport has upon media theory itself.

[16] 'When [Plato] turns against poetry,' notes Eric Havelock, 'it is precisely its dynamism, its fluidity, its concreteness, its particularity, that he deplores. He could not have reached the point of deploring it if he had not become literate himself' (1986: 96).

It goes without saying that media theory does not bear a great deal of resemblance to the sciences with which Serres principally concerns himself in the *Hermes* books: it makes little claim to formal purity; it does not in any way follow the scientific method; and it does not evince the kind of historical 'progress', however aleatory, that Serres views as central to such sciences, even if it does obviously demonstrate a historical progression (in the non-teleological sense of the word). Indeed, much of the 'progress' media theory makes, if we can still refer to such a thing, is mostly down to the rapid pace of technological development, and the new devices, platforms, and forms of content unremittingly introduced – an uneasy relationship, if there ever were one.

By the same token though, one of the virtues of media theory is that it tends to at least tacitly recognize the extent to which its concepts are empirically, materially, and technically conditioned (i.e. mediated). This fact is hard to avoid, since media theoretical concepts are typically tied to the media in response to which they have arisen. In many cases, a patina of formal ideality develops over time, lending them a multivalence that allows them to be applied to new objects, but their original surface usually remains visible underneath, manifesting as a kind of awkward discrepancy in relation to the new contexts and concerns in which they are placed. It is important that we ensure that, at a time when media and communications studies are being increasingly drawn toward scientistic qualitative and quantitative methods of research – which *do*, in many cases, aspire to a certain formalism – that we do not occlude this empirical residuum. Serres' *Hermes* pentalogy supplies a powerful, if enigmatic, corrective to uncritical positivism in its many guises, reminding us of the need to maintain reflexivity and embrace recursion in the face of a sometimes seemingly implacable pressure to 'keep up' with methodological trends and technological developments.

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